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FRANKLIN FENENGA, EDITOR

A MEDIUM FOR THE PUBLICATION OF THE RESULTS OF ANTHROPOLOGICAL AND RELATED RESEARCHES IN THE PLAINS

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Editorial Notes

With this issue we complete the first year of publication of the Plains Anthropologist. Responses to this journal have been very gratifying in two respects: comments directed to the editor have uniformly praised the venture and institutional subscriptions have been numerous. We are, however, working under the same handicaps that have dogged us in the past: not nearly enough material has been submitted for publication and we do not have as many subscriptions as we might expect from private individuals. We ask once more that people working in the Plains submit any appropriate papers for editorial consideration and that this journal be recommended to your students and to your colleagues who are interested in anthropology of the area.

I am able to make an addition to the article describing the ice-glider game printed in the last issue of the Plains Anthropologist. Mr. W. Raymond Wood writes from Fort Berthold that in the excavations carried on during the summer of 1954 in the section of Like-a-Fishhook Village ascribed to the Arikara, the North Dakota Historical Society party discovered three ice-glider dart heads of the type which I had described. This forces an emendation of the conclusions to the effect that the ice-glider game survived in Arikara culture at least as late as their occupation of Like-a-Fishhook Village in 1862. A further note: the description for the figure on page 35, illustrating that paper was omitted. Specimens A-I should be identified as the decorated specimens from Fort Lower Brule Trading Post, specimens J and K as the decorated specimens from Buffalo Pasture Village.

Subscription to the Plains Anthropologist for 1955 are now due.

A CHECK-LIST OF MIDDLE MISSOURI POTTER WARES, TYPES, AND SUBTYPES*

Richard P. Wheeler

At a session on pottery classification at the Eleventh Plains Conference for Archeology held at the University of Nebraska on November 27, 1953, I distributed dittoed copies of a check list of Middle Missouri pottery wares and types that had recently been named and described in print by several archeologists for discussion from the standpoint of taxonomic procedure. Since then, it occurred to me that the check-list might be of interest to students of Plains anthropology generally, as well as to individuals working directly with material from the Middle Missouri region, or the segment of the Missouri River valley extending from the Nebraska-South Dakota line to northwestern North Dakota. Accordingly, I am presenting the list now, in a thoroughly revised form, for wider consideration.

The 51 named pottery types and subtypes in the revised check-list are arranged alphabetically into two groups. Group I includes eight wares comprising a total of 27 "component" types. Group II includes 24 types and subtypes not yet classified according to wares.

Donald J. Lehmer (1951, p. 3), who named and described the Anderson Flared Rim, Foreman S-Rim, and Stanley Braced Rim wares, and the Monroe Collared Rim type, defines wares and types in these terms: "the wares may be thought of as groups of types which share such fundamental characteristics as the fabric of the pottery itself, the surface finish, the general vessel form and the basic rim form. The types themselves have all the characteristic features of the ware, but are distinguished by the decorative treatment and sometimes minor variations in form". Earlier temporary grouping of Middle Missouri pottery suggested by Paul L. Cooper (1949) - called "Category A", "Category B", and "Category C" -- are "wares" by Lehmer's definition, and so also are the Campbell Creek and Talking Crow wares, named and described by Carlyle S. Smith, and the Riggs S-Shaped Rim ware, named and described by Glenn Kleinsasser. The Wheeler ware, set up by Wesley R. Hurt, Jr., diverges somewhat from the other named wares: while the pottery fabric, surface finish, and general vessel form of five Wheeler pottery types are subsumed under the ware of the same name, the lip and rim forms of these types vary with the types.

The pottery wares, types, and subtypes in the check-list are described, in each instance, according to form, surface finish, and decoration -- the criteria on which the groupins are based. Descriptions of these features are limited to essential details. Full discussions of these features and of paste, etc., will be found in the original definitions of the wares, types, and subtypes (see references under "Sample" in each case, below).

The varying terms used in the original definitions for morphological parts of the vessel have been standardized in the present descriptions as

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* Submitted with the permission of the Secretary of the Smithsonian Institution.

follows: the lip is the juncture of the exterior and interior surfaces of the rim; the rim is the section between the orifice and the neck; the neck is the point of maximum constriction, or the point of marked change in trend or direction, of the vessel; the shoulder area is the space between the neck and the point of maximum diameter of the vessel (Wheeler, 1952, with modifications). The varying descriptive terms used in the original definitions with respect to form, decorative techniques, and, to a lesser extent, surface finish, have been preserved here with two notable exceptions. The term everted is used in place of "flared", "out-flared", and "flaring", and the term simple stamped is used in place of "ridged". The latter term refers to a ridged and grooved surface finish, assumed to have been produced by a grooved paddler or thong-wrapped paddle. This surface finish has been described in the literature as grooved paddle impressing, thong-wrapped paddle impressing, grooved paddle marking, etc. The term cord-roughened, also used herein, refers to a surface finish supposedly produced by malleating the clay with a cord-wrapped paddle. This surface finish is sometimes described as cord-wrapped paddle impressing.

GROUP I. Middle Missouri Pottery Wares and Component Types

Anderson Flared Rim Ware

Source: Dodd site, 39ST30, Oahe Reservoir, South Dakota.
Sample: 464 rim sherds; part of 5,983 cord-roughened and 2,435 plain body sherds (Lehmer, 1951, pp. 11-13).
Characteristics: (a) Form -- lip is broadly beveled to exterior; rim is straight and sharply everted, usually thicker than vessel wall; shoulder is usually absent but is sometimes well-defined; base is probably rounded; handles and lugs are lacking. (b) Surface Finish -- exterior body surface is predominantly cord-roughened, with large plain areas; interior body surface is smoothed. (c) Decoration -- varies with component types.
Component Types:

1. Anderson High Rim

Sample: 361 rim sherds (Lehmer, op. cit., p. 12, pl. 6, d-i).
Characteristics: Exterior dimension from lip to neck ranges from 3.0 to 4.5 cm. Lip and exterior rim surface are smoothed. Most examples are decorated -- commonly by tool punctations on the outer edge of the lip; less commonly by cross-hatch incisions on the lip, by tool punctations or an incised line on the lip and a band of parallel horizontal cord-impressed lines on the exterior rim surface, or by diagonal tool punctations just below the lip and a band of parallel horizontal incised lines overlaid by a series of 2 to 3 nested incised chevrons on the exterior rim surface. Some examples are without decoration.

2. Anderson Low Rim

Sample: 103 rim sherds (Lehmer, op. cit., pp. 12-13, pl. 6, a-c).
Characteristics: Exterior dimension from lip to neck ranges

3.0 cm. Lip and exterior rim surface are smoothed. Most examples are undecorated. Some examples are decorated by cross-hatch incisions on the lip, or by tool punctations on the lip or on the outer edge of the lip.

Campbell Creek Ware

Source: Talking Crow site, 39BF3, Fort Randall Reservoir, South Dakota.
Sample: 850 rim sherds; most of 4,399 cord-roughened, some of 5,259 plain, and a few of 8,534 simple stamped body sherds; and some of 856 decorated shoulder sherds (C. S. Smith, 1951, pp. 37-39).
Characteristics: (a) Form -- lip is flattened or rounded, usually thin, sometimes thickened by indentation; rim is usually straight and vertical or everted ("flaring"), rarely "collared"; shoulder is rounded; base is rounded; strap handles and thin triangular lugs or tabs, often vertically perforated, occur rarely with all component types save Campbell Creek Collared. (b) Surface Finish -- exterior body surface is pre-dominantly cord-roughened (vertically on shoulder, haphazardly below shoulder), rarely simple stamped, with smoothed areas; interior body surface is smoothed. (c) Decoration -- varies with component types. Shoulder areas are sometimes decorated with a band of alternating plats of punctates and parallel diagonal incised lines.
Component Types:

1. Campbell Creek Collared

Sample: 35 rim sherds (C.S. Smith, op. cit., p. 39, pl. 9, i).
Characteristics: Lip and upper part of exterior rim surface are smoothed. Lip may bear transverse notches. Exterior rim surface has a band of parallel horizontal trailed lines below the lip and above a row of finger-pinches which gives the rim a "collared" appearance.

2. Campbell Creek Cord Roughened

Sample: 123 rim sherds (C. S. Smith, op. cit., p. 39, pl.9, e-f).
Characteristics: Lip and exterior rim surface are cord-roughened or smoothed. Most examples are undecorated. When present, decoration is limited to transverse or parallel diagonal (right or left) notches, or to a single row of punctates, on the lip.

3. Campbell Creek Pinched

Sample: 280 rim sherds (C. S. Smith, op. cit., p. 38, pl. 9,a-c).
Characteristics: Lip and, generally, the exterior rim surface are smoothed. Decoration is limited to a single row of finger-pinches, suggesting a cogged wheel, on the exterior rim surface, at or just below the lip.

4. Campbell Creek Plain

Sample: 412 rim sherds (C. S. Smith, op. cit., p. 38, pl. 9, d).
Characteristics: Lip and exterior rim surface are smoothed. Most examples are undecorated. When present, decoration is limited to notches on the interior rim surface just below the lip,

parallel vertical or horizontal incised lines on strap handles, and a band of triangular plats of alternating parallel diagonal incised lines on the shoulder.

"Category B" Ware

Sources: (1) Generally, sites "between the mouth of the Cheyenne River and a point a few miles below Oacoma," South Dakota, Oahe and Fort Randall Reservoirs, and intervening area, South Dakota (Cooper, 1949, pp. 303-306, fig. 73, 10-12); (2) specifically, Talking Crow site, 39BF3, Fort Randall Reservoir, South Dakota (C. S. Smith, 1951, p. 40).

Samples: (1) not given; (2) 182 rim sherds, an indeterminate number of body sherds, and decorated shoulder sherds (C. S. Smith, op. cit., p. 40, pl. 9, g-h).

Characteristics: (a) Form -- lip, often slightly thinner than the rim, is flattened or rounded; rim is straight and everted ("flaring"); shoulder is rounded; base is probably rounded; strap handles occur occasionally. (b) Surface Finish -- exterior body surface is simple stamped or smoothed; interior body surface is smoothed. (c) Decoration -- lip and exterior rim surface are smoothed. Lip bears transverse or diagonal incised or tool-impressed lines, or is plain; exterior and interior rim surfaces may have short diagonal incisions just below the lip. Exterior rim surface has a band of parallel horizontal incised or trailed lines, and shoulder area often has a band of triangular plats of alternating parallel diagonal incised or trailed lines. Strap handles may bear parallel vertical or horizontal incised (or trailed) lines.

Component Types:

None described in print as yet.

Foreman S-Rim Ware

Sources: (1) Dodd site, 39ST30, Oahe Reservoir, South Dakota; (2) Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.

Samples: (1) 357 rim sherds, part of 5,983 cord-roughened and 2,435 plain body sherds (Lehmer, 1951, pp. 8-11); (2) 141 rim sherds and 16 body sherds (Hurt, 1951, pp. 43-45).

Characteristics: (a) Form -- lip is generally beveled inward, rarely beveled inward and then bent outward; rim is S-shaped in cross section, with the bulge between the orifice and the neck (30 to 60 mm. in height) producing a "collared effect"; shoulder is rather sharply angular; base is rounded to subconoidal. (b) Surface Finish -- exterior body surface is predominantly cord-roughened, with smoothed areas; interior body surface is smoothed. (c) Decoration -- varies with component types.

Component Types:

1. Foreman Cord Impressed

Samples: (1) 288 rim sherds (Lehmer, op. cit.,pp. 9-10, pl. 4); (2) 30 rim sherds and 1 body sherd (Hurt, 1951, pp. 44-45, figs. X-XI).

Characteristics: Lip and exterior rim surface are smoothed. Decoration consists mainly of a band of 2 to 12 parallel hor-

izontal cord-impressed lines applied to the bulge of the S-rim. Sometimes a row of punctates or of incised or cord-impressed diagonal lines or cross-hatches occurs above the band. A row of incised diagonal lines may also occur below the band of cord-impressed lines.

2. Foreman Cord Impressed Triangle

Sample: (2) 13 rim sherds and 6 body sherds (Hurt, 1951, p. 45, Figs. X-XI).

Characteristics: Lip and exterior rim surface are smoothed. Decoration is confined to the upper part of the exterior rim surface and consists of a row of incised diagonal lines just below the lip and, commonly, a band of pendant triangles framed by a single or double cord-impressed lines and filled with parallel horizontal cord-impressed lines. Rarely, the apices of the triangles are adjacent to the row of incised diagonal lines.

3. Foreman Incised

Samples: (1) 69 rim sherds (Lehmer, 1951, p. 10, pl. 5); (2) 60 rim sherds and 4 body sherds (Hurt, 1951, p. 43, figs. X-XI).

Characteristics: Lip and exterior rim surface are smoothed. Decoration consists commonly of a band of 3 to 9 parallel horizontal incised lines applied to the bulge of the S-rim. A row of punctates sometimes occurs above, or above and below, this band, or a row of incised cross-hatches bordered above and below by a single incised line occurs in place of the band of parallel horizontal incised lines. Two examples from the Dodd site have a row of incised diagonal lines, then a pair of parallel horizontal cord-impressed lines, then a pair of parallel horizontal incised lines, then a band of herringbone incisions, and finally, a row of fine punctates at the base of the rim.

4. Foreman Incised Triangle

Sample: (2) 38 rim sherds and 5 body sherds (Hurt, 1951, pp. 43-44, figs. X-XI).

Characteristics: Same as Type 2, above, except that the lines are incised rather than cord-impressed.

5. Foreman Plain

Sample: (1) Examples are said to be "very rare" but they are not quantified and are not illustrated (Lehmer, 1951, p. 11).

Characteristics: Examples "lack any sort of decoration".

Riggs S-Shaped Rim Ware

Source: (1) Thomas Riggs site, 39HU1, Oahe Reservoir, South Dakota; (2) Fort Yates site, 32SI4, Oahe Reservoir, North Dakota.

Samples: (1) 62 rim sherds (Kleinsasser, 1953, pp. 26-28); (2) "200-300 sherds, including 90 rims" (Hewes, 1949, pp. 65-66).

Characteristics: (a) Form -- lip is flattened; rim is flat S-shaped in cross-section, with the bulge between the orifice and the neck (20 to 48 mm.) producing a collared effect; shoulder is rounded; base is rounded; strap handles occur, rarely. (b) Surface Finish -- exterior body surface is simple stamped or smoothed; interior body surface is smoothed. (c) Decoration -- varies with component types.

Component Types:

1. Fort Yates Cord Impressed

   Sample: (1) 20 sherds (designated as "Aldren Cord-impressed) (Kleinsasser, op. cit., p. 27, figs. XXV, 11, 13-15, XXIX, 1-3); (2) "200-300 sherds, including 90 rims" (Hewes, op. cit., pp. 65-66, pls. V, lower right, V, and VI, right q).

   Characteristics: Lip and rim are smoothed. Lip is usually plain, sometimes bears incised cross-hatches. Exterior rim surface is decorated with a band of 4 to 7 parallel horizontal cord-impressed lines interrupted by 2 to 3 nested cord-impressed chevrons with apices at the lip, known as the "rainbow" pattern. Sometimes nodes appear on the lip directly above the apices of the chevrons.

2. Riggs Incised

   Sample: (1) 32 rim sherds (Kleinsasser, op. cit., pp. 27-28, figs. XXV, 3-9, XXIX 7-8, and XXXI, 8).

   Characteristics: Lip and rim are smoothed. Most examples are decorated like Type 1, above, except that lines are incised rather than cord-impressed. Sometimes nodes appear on the lip directly above the apices of the chevrons. Two examples have nested chevrons, only, on the outer rim. Two examples have incised zig-zags on the lip, and two others have diagonal punctations on the outer edge of the lip.

3. Riggs Plain

   Sample: (1) 10 rim sherds (Kleinsasser, op. cit., p. 28, fig. XXXI, 6).

   Characteristics: Lip and rim are smoothed. Most examples are without decoration. Three examples have diagonal punctates or incisions on the outer edge of the lip.

Note: Sixteen rim sherds and 1 restorable vessel from the Thomas Riggs site, 39HU1, which are decorated on the exterior rim surface with a band of 4 to 7 parallel horizontal cord-impressed lines only, have been classified as examples of the "Fort Yates Cord-impressed" type of the Riggs S-shaped Rim Ware. (Kleinsasser, op. cit., p. 27, fig. XXIX, upper left corner). This material does not correspond to the Fort Yates Cord Impressed type as originally defined by Hewes (op. cit.), and it should have been designated by another name. The confusion in nomenclature and taxonomy introduced here, and in the case of "Aldren Cord-impressed" noted above, is unfortunate.

Stanley Braced Rim Ware

Source: Dodd site, 39ST30, Oahe Reservoir, South Dakota.
Sample: 582 rim sherds, 5,246 simple stamped and brushed body sherds, and part of 2,435 plain body sherds (Lehmer, 1951, pp. 4-8).
Characteristics: (a) Form -- lip is generally rounded but is occasionally narrowed or flattened; rim is everted and thickened or "braced" with a fillet of clay (generally wider than it is thick, but sometimes almost circular in cross section) welded to the lip and sometimes welded to the exterior surface of the rim; shoulder is rounded; base is subconoidal; presence and absence of strap handles and lugs or tabs vary with component types. (b) Surface Finish -- exterior body surface is predominantly simple stamped, with smoothed areas at or near the base; interior body surface is smoothed. (c) Decoration -- varies with component types. Shoulder area is occasionally decorated with a band of fine incised triangles filled with parallel diagonal fine incised lines. The band is sometimes bordered at the bottom by a row of punctates.
Previous Designations: "Historic Arikara" and "Protohistoric Arikara" pottery (Strong, 1940, pp. 368-9, 381, pls. 7, 9); "Category A" sherds (Cooper, 1949, p. 303, fig. 73, 1-5).
Component Types:

1. Stanley Cord Impressed

   Sample: 118 rim sherds (Lehmer, op. cit., pp. 7-8, pl. 3).
   Characteristics: Lip and rim brace are smoothed; lower exterior rim is commonly brushed (vertically or almost vertically), or is smoothed. Decoration usually consists of parallel horizontal or diagonal (to the right or left) cord impressions on the rim brace. Diagonal cord impressions are sometimes carried across the lip to the inner rim surface. Occasionally a band of horizontal cord-impressed lines also occurs on the lower exterior rim surface. Strap handles and lugs or tabs are associated with this type. Strap handles, welded (not riveted) into the flange of the rim brace and into the vessel wall at the neck, have parallel horizontal cord-impressed lines. Lugs or tabs, drawn out from the lower edge of the rim brace, are usually decorated with parallel horizontal or diagonal cord-impressed lines; some of them bear a series of concentric cord-impressed arcs originating at the lip.

2. Stanley Plain

   Sample: 45 rim sherds (Lehmer, op. cit., p. 8, not illustrated).
   Characteristics: Lip and rim brace are smoothed; lower exterior rim surface is commonly brushed (vertically or almost vertically), or is smoothed; interior rim surface is usually brushed horizontally, or is smoothed. Lugs or tabs occur, rarely, at the lower edge of the rim brace, but strap handles seem to be absent. Rim brace, lower exterior rim surface, and lugs or tabs are undecorated.

3. Stanley Tool Impressed

   Sample: 148 rim sherds (Lehmer, op. cit., pp. 6-7, pl. 2).
   Characteristics: Lip and rim brace are smoothed; lower exterior

rim surface is commonly brushed (vertically or almost vertically), or is smoothed; interior rim surface is usually brushed horizontally, or is smoothed. Decoration commonly consists of diagonal (left or right) incisions on the rim brace; less commonly, of punctate impressions, herringbone incisions, or a band of horizontally incised lines, on the rim brace, or of indentations at the lip or at lip and lower edge of the rim brace, or deep cuts through the rim brace which give a "spurred" effect. Strap handles and lugs or tabs, identical with those described under Type 1, above, are associated with this type. The handles are decorated with parallel horizontal or diagonal incisions; the lugs or tabs are either undecorated or are decorated like the rim with which they are associated. Occasionally, a vessel has two pairs of lugs or tabs, or a pair of each opposite one another.

4. Stanley Wavy Rim

Sample: 271 rim sherds (Lehmer, op. cit., p. 6, pl. 1).
Characteristics: Lip and rim brace are smoothed; lower exterior rim surface is commonly brushed (vertically or almost vertically), or is smoothed; interior rim surface is commonly brushed horizontally, or is smoothed. Modification consists of alternating indentations in the outer and inner rim surfaces, evidently produced by pressing the plastic clay with offset thumb and forefinger, which give the lip and rim a sinuous or wavy appearance when viewed from above.

Talking Crow Ware

Source: Talking Crow site, 39BF3, Fort Randall Reservoir, South Dakota.
Sample: 1, 104 rim sherds; most of 8,534 simple stamped and 5,259 plain body sherds; some of 856 decorated shoulder sherds (C. S. Smith, 1951, pp. 34-47).
Characteristics: (a) Form -- lip is flattened or rounded, usually thin, sometimes thickened by indentation or by a fillet of clay welded to the exterior surface of the rim; rim is high and straight, and vertical or slightly everted ("flaring"); shoulder is rounded; base is rounded; presence and absence of strap handles, lugs or tabs, and lip "castellations" vary with component types. (b) Surface Finish -- exterior body surface is simple stamped (vertically on shoulder, haphazardly toward base), with plain areas; interior body surface is usually smoothed, rarely brushed. (c) Decoration -- varies with component types. Shoulder areas are occasionally decorated with a band of alternating plats of punctates and parallel diagonal incised lines.
Component Types:

1. Talking Crow Brushed:

Sample: 20 rim sherds (C. S. Smith, op. cit., pp. 34-35, pl. 8, a).

Characteristics: Lip is smoothed, exterior rim surface is brushed vertically, and interior rim surface is smoothed or brushed vertically. In half of the examples, notches occur at the inner edge of the lip; the rest are plain. In rare instances, the lip is slightly distorted outwardly, possibly by finger pressure. One example has a rounded point or "castellation" on the lip.

2. Talking Crow Cord Impressed

Sample: 26 rim sherds (C. S. Smith, op. cit., pp. 35-36, pl. 8, d-f).

Characteristics: Lip is smoothed, exterior rim surface is smoothed or brushed vertically, interior rim surface is smoothed or brushed horizontally. Decoration consists commonly of horizontal cord-impressed lines on the lip, rarely of transverse or diagonal (to the right or left) cord-impressed lines on the lip. In rare instances, parallel horizontal cord-impressed lines also occur on the exterior or interior rim surface just below the lip. Strap handles bearing parallel horizontal cord-impressed lines are present.

3. Talking Crow Indented

Sample: 79 rim sherds (C. S. Smith, op. cit., p. 35, pl. 8, b-c).

Characteristics: Lip is smoothed, exterior rim surface is brushed vertically, interior rim surface is smoothed or brushed horizontally. Decoration is limited to a row of punctates, parallel diagonal (to the right or left) or transverse notches, or a single incised line on the lip. One strap handle with punctates and one (undecorated?) triangular lug or tab on the lip are associated with this type.

4. Talking Crow Straight Rim

Sample: 979 rim sherds (C. S. Smith, op. cit., pp. 36-37, pl. 8, g-k).

Characteristics: Lip is smoothed, exterior rim surface is simple stamped or smoothed, interior rim surface is smoothed. Most examples are decorated, commonly by diagonal or transverse notches on the lip (rarely on the inner edge of the lip), less commonly by one or two rows of punctates on the lip. The exterior rim surface is undecorated. Of 143 rim-shoulder sherds, 21.4% are decorated on the shoulder by a band of triangular plats of parallel diagonal incised lines. Strap handles, 2 to 4 per vessel, are present and are usually decorated with parallel incised lines or incised lines in herringbone patterns. Thin (undecorated?), horizontally projecting triangular lugs or tabs occur, with unknown frequency, on the lip.

Comparisons: Sherds from the Middle Missouri region previously designated as "Category C" (Cooper, 1949, pp. 306, 308, fig. 73, 6-7) fall within the range of this type, and "Division I" rim sherds of Lower Loup pottery from Nebraska (Dunlevy, 1936, pp. 174-182, figs. 11-13, pls. I, A and B, and II, A) appear to be identical in appearance with sherds of this type.

Wheeler Ware

Source: Scalp Creek site, 39GR1, Fort Randall Reservoir, South Dakota.
Sample: 136 rim sherds, 1,774 body sherds, 1 restorable body sherd, and 1 restorable vessel (Hurt, 1952, pp. 73-77).
Characteristics: (a) Body Form -- shoulder is rounded, base is rounded; lip and rim form vary with component types. Presence and absence of strap handles and lugs or tabs vary with component types. (b) Surface Finish -- exterior body surface is simple stamped ("ridged"); interior body surface is smoothed or irregularly smoothed. (c) Decoration -- varies with component types.
Comparisons: All component types save Wheeler Deep-Trailed Rim were found at the La Roche site, Stanley County, South Dakota. (Meleen, 1948, pp. 20-24.).
Component Types:

1. Wheeler Deep-trailed Rim

Sample: 11 rim sherds and 1 restorable body sherd (Hurt, op. cit., pp. 76-77, figs. XIV, 4-6, 8 and XVII A).
Characteristics: Lip is extruded or T-shaped; rim is low, straight and vertical or everted ("flared"), or S-shaped. Strap handles and lugs or tabs are absent. Lip, exterior rim surface, shoulder area, and interior rim surface are smoothed. Decoration consists of diagonal punctations on the lip; and a band of deep incisions in a herringbone pattern, with a row of deep punctations at the lower edge of the band, on the exterior rim surface, or deep incisions in a herringbone pattern on the exterior rim surface, or deep incisions in a herringbone pattern on the exterior rim surface and shoulder area.
Comparisons: Rim forms and decoration appear to be similar to some "Division II" rim sherds of Lower Loup pottery from Nebraska (Dunlevy, 1936, pp. 182, 184, figs. 14 and 15, C).

2. Wheeler Horizontal-incised Rim

Sample: 19 rim sherds (Hurt, op. cit., p. 76, figs. XIV, 1-3, and XVII A).
Characteristics: Lip is extruded or T-shaped; rim is low, straight and vertical or everted ("flared"), or S-shaped. Strap handles and lugs or tabs are absent. Lip, exterior rim surface, shoulder area, and interior rim surface are smoothed. Decoration consists of incised diagonal lines or chevrons on the lip; a band of parallel horizontal incised or deep-trailed lines, with a row of punctations at the lower edge of the band, on the exterior rim surface; and tri-angular plats of parallel diagonal incised lines on the shoulder area.

Comparisons: Decoration appears to resemble that on sherds grouped under "Category B" from sites in Oahe and Fort Randall Reservoirs, South Dakota (Cooper, 1949, pp. 303-306, fig. 73, 10-12) and from the Talking Crow site, 39BF3, Fort Randall Reservoir, South Dakota (C. S. Smith, 1951, p. 40, pl. 9, g-h); the lip of "Category B" sherds, however, is rounded or flattened.

3. Wheeler Incised-triangle Rim

Sample: 8 rim sherds (Hurt, op. cit., p. 75, figs. XIII, 9-11, and XVII A).

Characteristics: Lip is flattened or rounded; rim is high, flat S-shaped. Strap handles are absent; one triangular lug or tab, below the outer edge of the lip, was recorded. Lip, exterior rim surface, shoulder areas, and interior rim surface are smoothed. Decoration consists of diagonal punctations on the lip and triangular plats of parallel horizontal or diagonal incised or trailed lines in a herringbone pattern, on the exterior rim surface and shoulder area. Usually a row of deep punctations occurs at the juncture of the rim and shoulder.

Comparisons: Hurt (idem.) states; "The same rim form and design elements were noted on Lower Loup sherds examined by the writer," but he does not give the provenience of this material nor its present disposition.

4. Wheeler Plain Rim

Sample: 53 rim sherds (Hurt, op. cit., pp. 74-75, figs. XIII, 6-8, and XVII A).

Characteristics: Lip is extruded, flattened, rounded, or beveled; rim is low, straight and everted ("flared") or vertical. Strap handles occur, rarely, but lugs or tabs are absent. Lip, exterior rim surface, shoulder area, and interior rim surface are generally smoothed. Decoration consists of incised or trailed diagonal lines or lines in a herringbone pattern on the lip; and incised or trailed lines in a herringbone pattern, triangular plats of parallel diagonal incised lines, or a series of vertical incised lines on the shoulder area. The exterior rim surface is undecorated.

Comparisons: Straight or everted rim sherds of this type resemble smoothed rim sherds of the Talking Crow Straight Rim type from the Talking Crow site, 39BF3, Fort Randall Reservoir, South Dakota. (C. S. Smith, 1951, pp. 36-37, pl. 8, K), except that the latter are higher and thicker and have a coarser paste.

5. Wheeler Ridged Rim

Sample: 45 rim sherds and 1 restorable vessel (Hurt, op. cit., pp. 73-74, figs. XIII, 1-5, and XVII A).

Characteristics: Lip is extruded, beveled, rounded or T-shaped; rim is low, straight and vertical or everted ("flaring"). Strap handles occur occasionally but lugs or tabs are absent. Lip, shoulder area, and interior rim surface are smoothed; exterior rim surface is simple stamped ("ridged"). Decoration consists of incised or trailed diagonal lines or lines in a herringbone pattern on the lip, and incised or trailed lines in a herringbone pattern on the shoulder area.

Comparisons: Straight and everted rim sherds of this type resemble simple stamped rim sherds of the Talking Crow Straight Rim type from Talking Crow site, 39BF3, Fort Randall Reservoir, South Dakota (C. S. Smith, 1951, pp. 36-37, pl. 8, h-i), except that the latter are higher and thicker and have a coarser paste.

Group II. Middle Missouri Pottery Types and Subtypes not yet classified according to Wares.

Capitol Flared Rim

Source: Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.
Sample: 400 rim sherds and 2,879 body sherds (Hurt, 1951, pp.48-49).
Characteristics: (a) Form -- lip and rim form, and presence or absence of loop handles and lugs or tabs, vary with subtypes. (b) Surface Finish exterior body surface is predominantly cord-roughened; interior body surface is smoothed. (c) Decoration -- about two-thirds of examples are decorated; the rest are undecorated (see sub-types below).

Subtypes:

1. C: Kimball Modified Lip

   Sample: 270 rim sherds (Hurt, op. cit., p. 49, fig. XI).
   Characteristics: Lip is rounded, beveled, extruded, or flattened; rim is everted ("flared"), incurved, or S-shaped, and may have a fillet of clay welded to the exterior rim surface. Decoration consists of punctations or diagonal incisions at the edge of, or just below, the lip on the exterior rim surface.

2. A: Kimball Plain

   Sample: 42 rim sherds (Hurt, op. cit., p. 48, fig. XI).
   Characteristics: Lip is rounded or flattened; rim is straight and incurved, or S-shaped. Undecorated loop handles and flat, semi-circular lugs or tabs occur, rarely. In a few examples, the outer edge of the lip is scalloped; otherwise decoration is lacking.

3. B: Maxon Flared-rim

   Sample: 88 rim sherds (Hurt, op. cit., pp. 48-49, fig.XI).

Characteristics: Lip is rounded or extruded; rim is straight and vertical or everted ("flared"). Decoration is entirely lacking.

Note: Lehmer (1951, p. 14) states: "At the time Hurt and the writer compared sherd samples, the Anderson Flared Rim material appeared to be identical with Hurt's Capitol Flared Rim, however, Hurt's category is much more inclusive. The Anderson material seems to correspond most closely to his "Subtype B: Maxon Flared Rim'". Re-definitions of the Capitol Flared-rim type and subtypes seem desirable if they are to be useful in future work.

Chamberlain Cord-Impressed Triangle

Source: Swanson site, 39BF16, Fort Randall Reservoir, South Dakota.
Sample: 22 rim sherds (Hurt, 1951, pp. 46-47, figs. X-XI).
Characteristics: Lip is rounded; rim is straight and vertical or everted ("flared"); shoulder is rather sharply angular; base is probably rounded. Handles and lugs are lacking. Exterior body surface is predominently cord-roughened, with smoothed areas; interior body surface is smoothed. Lip and exterior rim surface are smoothed. Decoration is limited to the exterior rim surface and consists of a row of diagonal incised lines or linear punctations and, below this row, a band of pendant cord-impressed triangles (with two framing lines) filled with parallel horizontal cord-impressed lines.

Chamberlain Incised Triangle

Source: Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.
Sample: 33 rim sherds (Hurt, 1951, pp. 45-46, figs. X-XI).
Characteristics: Lip is rounded; rim is straight and vertical or everted ("flared"); shoulder is sharply angular; base is probably rounded. Handles and lugs are lacking. Exterior body surface is predominantly cord-roughened, with smoothed areas; interior body surface is smoothed. Lip and exterior rim surface are smoothed. Decoration is limited to the exterior rim surface and consists of a row of diagonal incised lines or linear punctations and, below this row, a band of pendant incised triangles (with two framing lines), either filled with parallel horizontal incised lines or plain. In the latter case, the intervening triangular spaces are filled with parallel horizontal incised lines. In some examples, the apices of the pendant triangles are cut off.

Chamberlain Simple Cord-impressed

Source: Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.
Sample: 3 rim sherds and 1 restorable vessel (Hurt, 1951, p. 47, figs. IX and XI).

Characteristics: Lip is rounded; rim is everted ("flared"); shoulder is sharply angular (?); base is rounded; two loop handles were present on restorable vessel. Exterior body surface is predominantly cord-roughened with smoothed areas; interior body surface is smoothed. Decoration is limited to a band of horizontal cord-impressed lines on the exterior rim surface and to horizontal cord-impressed lines on the loop handles.

Ellis Cord-impressed

Source: Scalp Creek site, 39GR1, and Ellis Creek site, 39GR2, Fort Randall Reservoir, South Dakota.
Sample: 27 rim sherds (Hurt, 1952, p. 67, figs. XV, 5-8, XVII A, and XVIII).
Characteristics: Lip is flattened, rounded, or slightly extended; rim is straight and vertical or slightly everted ("flaring"). Handles and lugs are lacking. Exterior rim and body surfaces are vertically cord-roughened; lip and interior rim and body surfaces are smoothed. Decoration consists of a row of diagonal or vertical punctations at the outer edge, or alternating outer and inner edges, of the lip, and a band of 3 to 8 parallel horizontal cord-impressed lines on the upper part of the exterior rim surface.
Note: This type appears to be identical with the Feye Cord Roughened type described from two sites, 25PT9, and 25PT12, Platte County, Nebraska (Kivett, 1952, p. 55, pls XXVII and XXIX, A, 2, 5-8).

Ellis Plain

Source: Scalp Creek site, 39GR1, Fort Randall Reservoir, South Dakota.
Sample: 25 rim sherds (Hurt, 1952, pp. 68-69, figs. XVI, 5-6, SVII A, and SVIII).
Characteristics: Lip is beveled or extruded; rim is everted ("flaring"). Handles and lugs are lacking. Exterior body surface is vertically cord-roughened; interior rim surface is vertically cord-roughened or smoothed, and lip is smoothed. In one example, the lower edge of the beveled lip is scalloped; otherwise decoration is lacking.

Foreman Flared-rim

Source: Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.
Sample: 9 rim sherds and 1,538 body sherds (Hurt, 1951, p. 50, figs. IX-XI).
Characteristics: Lip is rounded, beveled, or extruded; rim is straight and vertical or everted ("flared"). A fillet of clay occurred on the exterior surface of one straight and vertical rim sherd. Handles and lugs are lacking. Exterior body surface is cord-roughened and smoothed. Exterior rim surface and lip are smoothed. Decoration is limited to a row of small punctations at the outer edge of the lip or to a row of diagonal punctations on the exterior rim surface just below the lip. Some examples are undecorated.

Fort Yates Fine Incised

Source: Fort Yates Village, 32SI4, Oahe Reservoir, North Dakota.
Sample: 88 sherds, including 41 rim sherds (Hewes, 1949, pp. 64-65, pl. VI, left, K, right, l, n, p).
Characteristics: Lip is rounded, flattened, or thickened; rim is S-shaped. Handles and lugs are lacking. Lip, exterior rim surface, and exterior body surface are smoothed; interior body surface is irregular smoothed. Decoration consists of incised criss-cross lines on the lip; and either a band of incised criss-cross lines, or a band of parallel horizontal incised lines with superimposed vertical and diagonal incised lines suggesting "trees" or "drooping cornstalks", or both (the former above the latter), on the exterior rim surface.

Fort Yates Plain

Source: Fort Yates Village, 32SI4, Oahe Reservoir, North Dakota.
Sample: 312 sherds, including 271 rim sherds (Hewes, 1949, pp. 66-67, pls. V, t, u, and VI, right, r).
Characteristics: Lip is rounded or is tapered to a thin edge; rim is straight and vertical or everted ("outflared"). Lip and exterior rim surface are smoothed; exterior body surface is simple stamped or smoothed; interior body surface is roughly smoothed. Decoration is limited to the lip and consists of finger crimping, finger or tool impressions, incised cross-hatches, or notches on the lip or at the edge(s) of the lip. Occasionally nodes occur along the top of the lip

Missouri Bluffs Cord-impressed

Source: Scalp Creek site, 39GR1, Fort Randall Reservoir, South Dakota.
Sample: 4 rim sherds (Hurt, 1952, pp. 69-70, figs. XV, 12, XVII A, and XVIII).
Characteristics: Lip is rounded or slightly extruded; rim is everted ("flaring"). Handles and lugs are lacking. Lip, exterior and interior rim surfaces are smoothed. Decoration consists of diagonal or vertical punctations just below the outer lip; a band of 5 or 6 parallel horizontal cord-impressed lines; and, below the band, a row of small pendant triangles framed by single cord-impressed lines.

Mitchell Broad-trailed

Source: Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.
Sample: 13 rim sherds, 58 body sherds, and 1 restorable vessel (Hurt, 1951, pp. 42-43, figs. IX-XI).
Characteristics: Lip is rounded, beveled, or outwardly rolled; rim is straight and everted ("flared"); shoulder is sharply angular; base is rounded. Loop handles are common and occasionally take the form of simple animal effigies; semicircular nodes are sometimes present. Exterior body surface is cord-

roughened or smoothed; interior body surface is smoothed. Lip and exterior rim surface are smoothed. Decoration consists of incised cross-hatches on the lip; a row of deep round or diagonal punctations just below the outer edge of the lip; and a band of 2 or 3 broad-trailed geometric meanders meanders, or of triangles (with the apices toward the lip) framed by 2 broad-trailed lines and filled with parallel horizontal incised lines, or rarely of broad-trailed concentric circles on the exterior rim surface.

Mitchell Incised

Source: Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.
Sample: 71 rim sherds and 31 body sherds (Hurt, 1951, p. 41, figs. X-XI).
Characteristics: Lip is rounded, beveled, T-shaped, or extruded; rim is straight and vertical, everted, or in-curved, or S-shaped with a fillet of clay on the exterior rim surface; shoulder is rounded; base is rounded. Exterior body surface is cord-roughened or smoothed; lip, exterior rim surface, and interior body surface are smoothed. Decoration consists of a row of deep round or diagonal punctations, or rarely incised cross-hatches, just below the outer edge of the lip; and a band of parallel horizontal incised lines (up to 25 or 30 lines) on the exterior rim surface and shoulder area. Sometimes a row of punctations occurs lower down on the exterior rim surface, below 3 parallel horizontal incised lines.

Monroe Collared Rim

Source: Dodd site, 39ST30, Oahe Reservoir, South Dakota
Sample: 32 rim sherds (Lehmer, 1951, pp. 13-14, pl. 7, a-c).
Characteristics: Lip is slightly rounded; collared rim (22 to 35 mm. high) was produced by modeling, as in case of an S-shaped rim, or by thickening the rim on the exterior; shoulder is absent; base is probably rounded. Handles and lugs are lacking. Exterior body surface is cord-roughened or smoothed; lip and exterior rim surface are smoothed. Decoration is limited to the exterior rim surface and consists of a band of triangles, framed by 1 or 2 incised lines and filled with parallel horizontal incised lines, which are pendant from 1 or 2 horizontal incised lines just below the lip. Occasionally a row of punctations occurs just below the lip, and a horizontal line is sometimes present at the base of the rim, framing the band of triangles.

Randall Incised

Source: Scalp Creek site, 39GR1, Fort Randall Reservoir, South Dakota
Sample: 14 rim sherds (Hurt, 1952, p. 69, figs. XVI, 2-4, XVII A, and XVIII).
Characteristics: Lip is rounded or flattened; rim is everted ("flaring"). Handles and lugs are lacking. Exterior body

surface is probably cord-roughened; lip, exterior and interior rim surfaces are smoothed. Decoration consists of a band of 3 to 5 parallel horizontal incised or trailed lines on the exterior rim surface. Sometimes a row of diagonal or vertical trailed lines or punctations occurs just below the lip and above the band of horizontal lines.

Riggs Flared Rim

Source: Thomas Riggs site, 39HU1, Oahe Reservoir, South Dakota.
Sample: 149 sherds and 4 restorable vessels (Kleinsasser, 1953, pp. 25-26, Figs. XXIV and XXVIII, bottom row).
Characteristics: Lip is flattened, rounded, thickened, everted, or beveled; rim is low or high and everted ("flared"); shoulder is angular or rounded; base is rounded. Riveted loop handles occur. Exterior body surface is simple stamped ("ridged"), smoothed, or rarely burnished. Lip and exterior rim surface are smoothed. Decoration is limited to the lip, the interior rim surface, and the shoulder area, and consists of punctates, incised cross-hatches, incised chevrons, or punctated nodes on the lip; large or small punctates on the upper part of the interior rim surface; and incised or trailed chevrons and horizontal lines on the shoulder.

Riggs Punctate

Source: Thomas Riggs site, 39HU1, Oahe Reservoir, South Dakota.
Sample: 32 sherds (Kleinsasser, 1953, p. 29, figs. XXVI and XXX, 1-4).
Characteristics: Lip is flattened, rounded, beveled, or thickened; rim is high, straight and vertical or everted ("flared"), and sometimes has a fillet welded on the upper part of the exterior rim surface. Handles and lugs are lacking. Nodes occur on top of the lip. Exterior body surface is simple stamped ("ridged") or smoothed. Lip, exterior and interior rim surfaces are smoothed. Decoration is limited to a row of deep punctates on or at the outer edge of the lip, on the upper part of the exterior rim surface, or on the fillet applied to the exterior rim surface.

Riggs Straight Rim

Source: Thomas Riggs site, 39HU1, Oahe Reservoir, South Dakota.
Sample: 600 sherds and 11 restorable vessels (Kleinsasser, 1953, pp. 22-25, figs. XXIII, XXVII, upper row, and XXXI, 1-4).
Characteristics: Lip is rounded, flattened, beveled, thickened, or scalloped; rim is low or high, and is straight and vertical or everted; shoulder is rounded or angular; base is rounded. Exterior body surface is simple stamped ("ridged") or smoothed; interior body surface is simple stamped; horizontally brushed or smoothed. Lip, exterior and interior rim surfaces are smoothed. Strap handles are present. Nodes occur on the lip. Decoration is limited to the lip, the upper part of the ex-

terior and interior rim surfaces, and the shoulder area. It consists of circular or oval punctates, and transverse, diagonal or or criss-cross incisions on the lip; circular or oval punctates or diagonal or vertical incisions on the upper part of the exterior and interior rim surfaces; and incised or trailed chevrons and incised "bird tracks" on the shoulder.

Scalp Cord-impressed

Source: Scalp Creek site, 39GR1, Fort Randall Reservoir, South Dakota.

Sample: 14 rim sherds (Hurt, 1952, pp. 67-68, figs. XV, 9-11, XVII A, and XVIII).

Characteristics: Lip is rounded or flattened and slightly extruded; rim is high and everted ("flaring"). Handles and lugs are lacking. Exterior body surface is apparently cord-roughened. Lip, exterior and interior rim surfaces are smoothed. Decoration consists of diagonal punctations or short cord-impressed lines on the lip, and a band of 1 to 3 cord-impressed lines with a row of small pendant triangles framed by a single cord-impressed line and filled with parallel diagonal or horizontal cord-impressed lines on the upper part of the exterior rim surface.

Note: This type appears to be identical with the Feye Cord Impressed type described from two sites, 25PT9 and 25PT12, Platte County, Nebraska (Kivett, 1952, pp. 54-55, pl. XXVII, A, 1, 3-4).

Scalp Punctated

Source: Scalp Creek site, 39GR1, and Ellis Creek site, 39GR2, Fort Randall Reservoir, South Dakota.

Sample: 32 rim sherds (Hurt, 1952, pp. 66-67, figs. XV, 1-4, XVII A, and XVIII).

Characteristics: Lip is flattened and extruded or rounded; rim is everted ("flaring"). Handles and lugs are lacking. Exterior rim surface is vertically cord-roughened; interior rim surface is smoothed. Decoration consists of diagonal punctations or short incised lines on the outer edge of the lip and a single row of exterior or interior punctates, or two rows of alternating exterior or interior punctates, on the upper part of the rim.

Twelve Mile Black on Grey

Source: Thomas Riggs site, 39HU1, Oahe Reservoir, South Dakota; Twelve Mile Creek, Brandon, Mitchell, and Rygh sites, and site 39BR13, in South Dakota.

Sample: 17 rim sherds and 54 body sherds (Kleinsasser, 1953, pp. 28-29, figs. XXVII, 18-22, and XXX, 6; Anon., 1953; Hurt, 1953; and Fraser, n. d.).

Characteristics: Lip is flattened (?); rim is straight and vertical, incurved, or everted, or is S-shaped. Exterior rim and body surface are smoothed or simple stamped; interior rim and body surfaces are smoothed. Decoration consists of negative or positive black painted geometric or curvalinear figures on the exterior, rarely

on the interior, surface. Examples from the Rygh site, South Dakota (Fraser, op. cit.) commonly exhibit three motifs -- diamond, triangle, and a group of vertical lines; one "rainbow" figure was also noted. In some examples from the Rygh site, the painted designs were placed over a band of cord-impressed or incised lines.

Upper Republican

Subtype: Stuart Collared-rim

Source: Swanson site, 39BR16, Fort Randall Reservoir, South Dakota.
Sample: 53 rim sherds (Hurt, 1951, pp. 47-48, fig. XI).
Characteristics: Lip is rounded or slightly extruded: rim is collared ("Upper Republican wedge-shaped" or "flat S-shaped"). Exterior body surface is cord-roughened (?); lip, exterior and interior rim surfaces are smoothed. Decoration is confined to the collar and consists of a row of short diagonal incised lines or deep punctates at the edge of, or just below, the lip; a band of 3 to 5 parallel horizontal incised or trailed lines; and another row of short diagonal incised lines or deep punctates at the edge of, or just below, the lip; a band of 3 to 5 parallel horizontal incised or trailed lines; and another row of short diagonal incised lines or deep punctates at the lower edge of the collar.

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PLAINS INDIAN FEATHERED BONNETS

James H. Howard

When the average person thinks of an American Indian man, he usually pictures him as wearing a large eagle feather "war bonnet." This stereotype has become so widespread that nowadays even the Indians themselves have taken it up, and members of tribes who never used the headgear in aboriginal times now wear it on occasions when white people expect them to "look like Indians." Much confusion exists, even among anthropologists, as to the symbolism, use and distribution of the various types of feathered bonnets worn by the Indians of the Plains region. It is the purpose of this short article to describe a few of the more common types and to discuss their distributions and functions.

The "Horned" Bonnet

Apparently one of the oldest forms of feathered bonnet is the "horned" bonnet. Typically, this consists of a buckskin skull cap covered with strips of ermine skin. Shaved bison or cow horns tipped with bunches of dyed horsehair and ribbons are attached at the sides, with bunches of split owl feathers beneath. In back, beginning at the wearer's neck, is a long tail is red strouding with a single row of eagle feathers standing out from it, falling to the wearer's heels (Fig. 1).

There are several variants of this basic form. One has only twelve eagle feathers (a single tail) fastened to the red strouding trailer in the back (Fig. 2). The feathers are attached, in rows of three, by loops made in the bases of the quills. Another form of the horned bonnet omits the trailer completely, utilizing long strips of ermine, which fall over the wearer's shoulders instead (Fig. 3). A third adopted by the Dakota from a famous Crow warrior killed by them in battle, is the same as type 1, but has four horns, instead of two, at the sides.

The horned bonnet was commonly used by chief and warriors of the various Missouri tribes encountered by Catlin in the 1830's. Later, however, it seems to have been gradually displaced by other headdresses, notably the flaring eagle feather bonnet, to be described below. Among the Dakota the horned bonnet, though apparently widely used by both chiefs and warriors in Catlin's time, later came to be identified with a certain warrior society, the Stronghearts. Though complete data are lacking, a similar restriction of its use seems to have developed among the Plains-Ojibwa, Plains-Cree, Mandan, Hidatsa, and Crow where the headdress also became associated with warrior societies which often served as camp police.

At the present time the horned bonnet is used by only a few individuals in the most conservative Northern Plains tribes, such as the Hidatsa, Assiniboin and Blackfoot. It has lost any symbolism it may once have had.

The "Flaring" Eagle Feather Bonnet

The Indian war bonnet of popular conception, as has been mentioned earlier, is the "flaring" bonnet of eagle feathers (Fig. 4). This bonnet

apparently developed in the Plains area though the exact date of its invention is not known. Catlin pictures it occasionally (Mandan, Ojibwa, Dakota, Oto) in the 1830's and 1840's but it was apparently not common at that time. It did not become popular in the Plains area until at least 1850 and was unknown to some "typical" Plains tribes, such as the Kiowa and Comanche, until shortly before the reservation era.

The flaring bonnet probably developed from the "straight up" bonnet, a much simpler type in which the feathers were merely stuck upright in a band which encircled the wearer's head. Older examples of the flaring bonnet in museum collections tend to bear out this theory, being much more erect and restricted in the crown than later specimens. The "straight up" bonnet enjoyed a wide distribution throughout North America. It persists in the ceremonial headdresses of a few Eastern tribes, in the nearly obsolete "straight up" chief's bonnet of the Blackfoot, and in the "play Indian" headdresses of children.

The typical flaring war bonnet is made of about 31 golden eagle tail feathers, attached to a buckskin or felt crown. The feathers are attached to the crown by means of loops wrapped with pieces of red strouding at their bases. A thong, passing in and out of slits near the base of the crown, is threaded through these loops. The feathers are also fastened to one another with a buckskin thong which passes through the quill of each feather a few inches from its base.

The slits in the crown drop a few inches at either side of the wearer's head, causing the bonnet to flare out gracefully to the sides and back. It is largely this simple trick that transforms the stiff and rather unattractive form of the straight-up headdress to the graceful lines of the flaring bonnet.

Occasionally a long single or double trail is attached to the back of the bonnet, a feature probably derived from the horned bonnet. Sometimes, though rarely at present, bison or cow horns were attached at the sides of the bonnet. A brow band of beadwork or quillwork is usually attached to the front of the bonnet and side drops of ermine tails, feather or ribbons are fastened at either end of this. Many bonnets have a "chief plume" consisting of a long, stripped eagle quill with downy feathers attached at one end, attached to the center of the bonnet crown, so as to project several inches beyond the other feathers.

Though apparently invented in the Plains area, and originally confined largely to that region, the flaring bonnet diffused rapidly during the latter part of the 19th and early years of the 20th centuries. It is now found throughout the United States and Canada, and has even spread into Mexico where it is worn by members of the Concheros, a singing and dancing group who supposedly imitate pre-conquest Mexican Indians.

Strangely enough, the flaring bonnet is no longer commonly seen in the Plains area where the porcupine and deer hair "roach" headdress is generally preferred. The eagle feather bonnet, when seen, is usually worn by "professional Indians," who appear in native costume only for commercial purposes. On the other hand, in the Eastern Woodlands, the war bonnet has almost completely displaced the roach headdress which originated there, thus offering a unique example of cultural exchange.

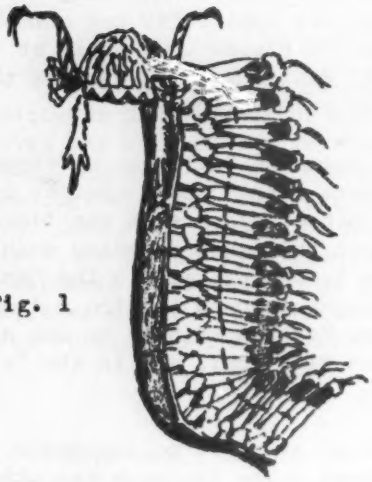

Fig. 1

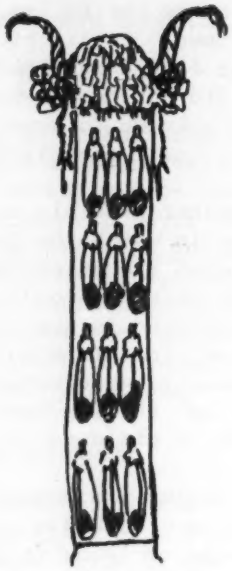

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 1. Typical "horned bonnet". Split bison horns at sides are wrapped with ribbons to give "barber-pole" effect. Fig. 2. Variant of horned bonnet, back view. Fig. 3. Variant of horned bonnet with ermine skins substituted for trail in back. Fig. 4. "Flaring" eagle feather war bonnet, showing "chief plume". Fig. 5. "Fluttering feather" bonnet.

There are many accounts in the anthropological literature as to the symbolism of the war bonnet and the qualifications necessary for a person wearing it. These, the present writer is inclined to take with a grain of salt in view of the fact that even very early painting and photographs often show nearly every member of an Indian group wearing the headdress, including even women and children. Though the flaring war bonnet seems to have been vaguely connected with a headman or warrior class, in most tribes the bonnet seems to have been worn simply by anyone who owned a bonnet and felt like wearing it, which is the present day practice. It is certainly absurd to accept the often offered explanation that each feather stood for a war honor. If this were so we would expect to find bonnets with 7, 13, 23 and all other odd numbers of feathers. Instead, the number remains quite constantly at 31. If any sumbolism at all was attached to the wearing of the bonnet, it was certainly of a very general kind.

In some Plains tribes, at the present time, the flaring war bonnet, though rarely worn, is a favorite presentation item to honored guests. Among the Mandan, Hidatsa and Arikara of North Dakota, bonnets of this sort are called "traveling" bonnets. Given away at dances to honor individuals, they must be given away in turn by the recipient within a few months. Persons who retain such a bonnet instead of giving it away again are considered miserly by the tribe.

The "Fluttering Feather" Bonnet

A very striking and unusual type of bonnet was the "fluttering feather" type (Fig. 5). This form of headdress is made up of many feathers attached at their bases to a felt or buckskin cap so as to hang loosely around the wearer's head. A bonnet of this type is pictured by Densmore in her Teton Sioux Music (Plate 9, opp. p. 90) and was apparently quite common among the Dakota at the time this work was written (1915). The headdress was also used by the Minnesota Ojibwa and perhaps by other tribes of the general area. An example of this type of headdress collected by the writer at Ft. Yates, North Dakota, utilizes golden eagle, hawk and owl feathers. The headdress is now obsolete.

ARCHEOLOGICAL WORK AT 32ML2 (LIKE-A-FISHHOOK VILLAGE AND FORT BERTHOLD), GARRISON RESERVOIR AREA, NORTH DAKOTA, 1950-1954*

G. Hubert Smith

Field Work

Parts of four seasons of archeological field work have now been devoted to site 32ML2, an important site in the Garrison Reservoir area, North Dakota, and the time has come for a general statement on the nature of this work and the significance of the site. 32ML2 is a large and complex site, comprising two major parts. The nucleus of the entire unit is the site of Like-a-Fishhok Village, the last truly native community of earth-lodge dwelling peoples of the northern Plains region -- the Mandan, the Hidatsa (officially known as the Gros Ventres), and the Arikara, the peoples officially known since the establishment of the Fort Berthold Indian Reservation as the Three Affilitated Tribes.

In addition to the site of the native village, 32ML2 also includes the sites of two major trading posts, several smaller private stores, the first agency headquarters established for these peoples, and the cemetery of the village, probably first used solely for scaffold burials, and later for interments in accord with Western custom. Among the closely-associated features of the entire site, those of the two major trading posts in the neighborhood of the village served to fix upon the whole area the name by which it seems to have been most commonly known, as well as providing the permanent name of the Indian reservation. Even the peoples themselves, of varied linquistic affiliation and originally tribally distinct, have been widely known as the Fort Berthold Indians.

When it became known that the construction of the Garrison Dam and the impounding of waters in the Garrison Reservoir would inundate this large and important historic site, measures were taken to salvage a part of the archeological and historical calues that would be lost. The site was recognized as one of the major losses to be sustained in this area, and in 1950, through an agreement between the National Park Service and the State Historical Society of North Dakota, excavations were begun at the site of thevillage, under the supervision of Glenn Kleinsasser for the Society. The principal operation of that season was the excavation of three lodge sites, including that of a ceremonial lodge, in the Arikara quarter of the village (Kleinsasser, n. d.).

The following year, under the direction of James H. Howard of the Historical Society, and again in 1952 under Howard, assisted by Alan R. Woolworth, further excavations were made at the site of Like-a-Fishhook, again under cooperative agreements between the Society and the Park Service. During these two season exploration of numerous additional earth-lodge sites was accomplished, including that of the ceremonial lodge of the Hidatsa (also used by the Mandan), together with investigation of other dwelling sites, cache pits, a midden, a large enclosure

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* Submitted with the persmission of the Secretary of the Smithsonian Institution.

--possibly a corral -- and the palisade that had enclosed the Mandan-Hidatsa quarter of the village, the portion first established, according to native tradition (Howard, n.d.).

During the field season of 1952, in addition to the work of the Society here, the Missouri Basin Project, Smithsonian Institution, devoted a part of the time of its field personnel to assisting with investigations at site 32ML2, in addition to work at other sites in the reservoir area such as 32ME15 (Rock Village), another historic village site some miles downstream from Like-a-Fishhook, where excavations had been made in 1950 and 1951. In assisting at 32ML2, the Missouri Basin Project gave its attention to parts other than that of the village proper, upon which the Society was engaged, and under the supervision of G. Hubert Smith, assisted by George Metcalf, excavated the site of Fort Berthold II, the latter of the two major trading post sites of the area (Smith, n.d.). Thus in 1952 there were two separate field parties at work on different parts of 32ML2.

Parts of three seasons had now been devoted to 32ML2, an unusual thing in a program of salvage archeology. Those who had taken part in the excavations and others directly concerned, however, came to feel more and more strongly the uniqueness and complexity of the site, and to believe that still further work should be done, if possible, in order to sample parts of the site that had not yet been given attention, and to search for certain important data that had not yet been obtained. No further work was, however, possible here until the field season of 1954. By this time the site was in immediate danger of innundation, and it was expected that the normal "June rise" would flood it for the last time, or so alter its appearance that any subsequent study would be impractical.

During 1954, therefore, it was planned that both the Society and the Project should maintain a field party at 32ML2, for a brief period at least to accomplish limited investigations, and that the two institutions should operate jointly. This was done, and during the time remaining -- which proved to be two months' time rather than one, as had been anticipated -- the site of the first trading post known as Fort Berthold was also exposed and excavated by Woolworth and Smith, in part with mechanical equipment, and the larger portion of the course of the original palisade that had enclosed the Mandan-Hidatsa quarter of the village, and other minor features. With the completion of this work, in mid-July, at the end of the fourth season of excavation, three major parts of the entire site had been explored or sampled, together with several minor features. No further work will probably be possible.

Historical background

General accounts of the history of site 32ML2 have been prepared by Ray H. Mattison for the National Park Service, and Adrian R. Dunn (Mattson, 1951; Dunn, n.d.), but it seems desirable to review the general historical significance of this site, in the light of which the archeological work was planned and executed. Like-a-Fishhook Village and the first Fort Berthold were apparently established simultaneously in the year 1845, near the close of the period of dominance of Fort Clark, a trade center some fifty miles downstream. This period was a critical one in the history of

the three sedentary tribes of the upper Missouri. In 1837 the tribes in the vicinity of Fort Clark had suffered disaster in attacks of smallpox. The Mandan seem to have suffered particularly from this scourge, and were doubtless influenced chiefly by these events to join with their close relatives, the Hidatsa. Some years elapsed, but by 1845 the culture center of the area had shifted from the old villages at the mouth of the Knife River to the new site up river, at a gread bend resembling a fishhook. Here, with the assistance of such traders as Francis A. Chardon and James Kipp, who had previously traded with them at Fort Clark, a new village was established, complete with palisade. About the same time, a new trading post, Fort Berthold, was also build and named for a partner of the powerful firm of Pierre Chouteau, Jr., often referred to by the name of its predecessor, the American Fur Company.

The success of this great company on the upper Missouri River, whose departmental headquarters were Forts Pierre and Union, seems immediately to have led to the development of opposition, a familiar phenomenon of the trade. Almost immediately, houses of smaller companies seem to have sprung up adjacent to Like-a-Fishhook Village and Fort Berthold. As early as 1851 one such competing post was in operation, and by 1858 another company was erecting a post even larger than Fort Berthold itself. This post was first known as Fort Atkinson, named for one of the partners of the new opposition. Of this post there is a remarkably interesting and detailed record, thanks in large part to the urge to record his experiences felt by one of the junior partners, Henry A. Boller. Boller wrote long and thoughtful letters to his family -- one of which even contains a ground plan of the new Fort Atkinson and an account of its appearance and construction, written while it was going up -- letters clearly intended for future reference, which were carefully used when, some years later, Boller published an account of his experiences among the Indians (Boller, 1868). Fortunately for history and ethnology, Boller's original letters have also been preserved, and are now in the custody of the State Historical Society. Thanks to these materials, more is known of the post first called Fort Atkinson than of the original post at Like-a-Fishhook, the first Fort Berthold. In this instance the materials are supplemented by a rather large body of contemporary documentary evidence of other kinds, including pictorial sources -- even photographs. For by this period numerous travelers were visiting this part of the upper river, attracted by the remarkable native community, photographs and sketches of which were also being made.

Shortly after the construction of Fort Atkinson, the original post of the Chouteau Company seems to have served its purpose and in 1862 it was destroyed in a fire, during the course of an attack upon the whole community of whites and friendly village Indians by the ever-hostile Sioux. The loss of the first post led to the acquisition of the opposition post by the Chouteau firm, and its renaming as Fort Berthold, and it is this latter of the two major posts that is best known in historical accounts. By 1862 also, the Arikara had at last joined with the Mandan and Hidatsa, beginning their actual joint residence with these culturally similar groups. Little by little the sedentary peoples of the upper Missouri had been retreating -- often before the more powerful and numerous Dakota bands, and before the inexorable advance of the whites. From the year 1862 the culture of the three tribes doubtless changed ever more rapidly.

One landmark in the history of culture-change among these peoples was the establishment, in 1867, of the present Indian reservation and the first separate agency headquarters of these tribes. An even more important cultural landmark of this period was reached about 1885, when in accord with the policy of the Indian Office at the time, these peoples were settled for the first time on individual allotments of land. After centuries of village life oriented about a simple agriculture, earth-lodge dwellings, and distinctive social and ceremonial complexes, they were now established in separate family groups over a wide area within the reservation. Interestingly enough, a new culture pattern now became dominant, one that had been introduced before the period of the allotments. This was the construction of dwellings of an alien style, of logs, after the fashion of the traders and other whites with whom the Indians were familiar. With the final abandonment of Like-a-Fishhook Village, soon afterward, the long history of earth-lodge habitations was at an end, never to be revived.

Like-a-Fishhook Village is, thus a key site in the long history of the interesting sedentary village-dwellers of the northern Plains, the last of a long series of sites of the kind distributed over hundreds of miles of territory in the Missouri Basin and persisting over many centuries of time -- the last in which many old native ways were followed. With its breakup, large parts of the distinctive culture of these peoples passed to the archeologist, much that cannot be reconstructed in any other fashion. This village had been the scene of events critical in the culture history of these peoples, and when the time comes for a full-dress study of this history -- something not yet attempted, though parts of the whole subject have been given attention by numerous able and interested students -- the portion represented at Like-a-Fishhook will be climactic in character.

Scarcely less important than the matter of the role of the village and of the history of these Indian peoples, from about 1845 until about 1885, is the significance of the site as one of the first residences of groups of white persons on the upper Missouri. From the point of view of the frontier of white settlement, paralleling the theme of native history, the several trading ventures and the establishment of local Indian administration here are significant in their own right. That the present excavations and correlated documentary research should have been possible, even under the limitations and restrictions of a salvage program, is fortunate, and the nature of these materials may perhaps suggest something of the potential historical and scientific scope of these salvage operations as a whole.

Archeological findings

Excavations at Like-a-Fishhook Village provided no startling new information about its history, though expanding knowledge of the details in many directions. Joint residence of the three tribes in a single new community, after 1862, doubtless served to modify and alter many ancient traits, just as the merging of the Mandan and Hidatsa groups must have done at a somewhat earlier date, but of these probable culture changes there seems to be little direct archeological evidence, and too little is yet known from archeological studies of earlier periods of the separate history of any of these three groups to permit direct comparisons.

The most remarkable changes now demonstrable are those in the style of the dwellings themselves, from the aboriginal earth lodges, ultimately, to the log cabin, sometimes furnished even with windows and chimneys. In at least one sphere it is possible to discern some resistance to culture change. The addition of a new quarter to the original village, with the establishment here of the Arikara, seems to have produced no fundamental change in the village patterns. Ceremonial lodges and ceremonial centers of each part apparently remained distinct, doubtless a manifestation of the conservatism generally thought to characterized ceremonialism. The two major parts of the entire village seem to have retained a loose community plan, comprising individual lodges located about a central open plaza roughly circular in outline, most lodges probably opening toward this central area.

With respect to other aspects of the material culture of these peoples, there is clear evidence of changes in diet during the period of residence at this village, the result of several factors, and of the replacement, in most spheres of culture, of perhaps the greater proportion of artifactual equipment of native provenience by satisfactory substitutes obtained through trade with the whites. Native pottery traditions, for example, seem by this period to have almost entirely disappeared, and relatively few artifacts of stone, bone, or other native materials seem to have survived in use. This shrinkage in the proportionate bulk of native cultural equipment was unquestionably accompanied by a shrinkage in the bulk of native culture in non-material realms, though perhaps in differing degrees, but of these matters there is, again, little new direct evidence. Howard has pointed out that materials from this site illustrate the profound and far-reaching effects of white culture upon native peoples during the past century, and the probably rapid adaptation to an alien culture effected by these peoples during their residence at Like-a-Fishhook, in intimate continuous contact with resident whites.

Excavations at the site of the two major trading posts adjacent to the village also contributed specific data previously lacking, if little to alter previous understanding of the general character of these facilities. The earlier of the two posts seems to have been located and oriented with greater care than the second, though the latter was used somewhat longer and perhaps somewhat more heavily. Materials, design, and construction of each are much as might have been anticipated. These early white structures were not, of course, systematically recorded by designers or builders, and the fortunate preservation of casual records of various kinds, as well as of certain physical remains, permits a degree of certainty about the structures comparable to that possible at the site of the village. Perhaps the most interesting single contribution to the record is the fact that in the case of Fort Berthold II, and perhaps in that of the original post as well, the architectural style followed was not that of corner-notch log structures most familiar today, but of structures having grooved corner-posts fitted to square-hewn horizontal timbers, late western examples of a style of ultimate French Colonial origin.

Of numerous objects recovered from the sites of these two trading posts little can be said as yet, pending proper study and research. Apart from objects illustrating subsistence, household furnishings and utensils, tools and implements, and the like, which are not unlike those that might have been found on any comparable isolated historic site of the period in question, the most interesting are, perhaps, thos pertaining to the Indian trade itself. The major categories of such goods that might be anticipated are represented -- glass beads, steel arrowpoints, and other similar goods of value to native and trader alike. One group of beads of this kind, from the site of the second Fort Berthold, has been described (Smith, 1953). These materials from the sites of the two major trading posts of the area will be useful particularly for comparative purposes in study of the materials from the excavation of the village site; they provide one of the few larger groups of documented objects from historic sites in the whole region of the upper Missouri. While scarcely spectacular, they are valuable for study and exhibition purposes. Some of them are, however, quite unexpected, among the lot are even a large fragment of a small cannon, probably destroyed in use, and unusual objects of some beauty such as a gorget of silver plate, engraved, appropriately enough, with the figure of a beaver.

Archeology has passed beyond the point at which it is concerned only with "origins", or with only the very long ago or the very far away. In the Old World, studies of the past now concern themselves with all periods and eras of world history, and even in the New World archeology deals with more than the remains and customs of peoples other than ourselves. Elsewhere in the New World numerous investigations have already been made of human activities of relatively recent date -- even of sites of white provenience solely -- and most of these have made additions to knowledge of the past, that varied mosaic so much of which has been irretrievably lost. Further study of the tangible remains and earlier documentary records of the complex site 32ML2 should provide additions to the vast mosaic.

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A PROPOSED STATISTICAL STUDY OF PHENOTYPIC VARIATION IN HUMAN POPULATIONS

D. D. Jensen

A glance into a few editions of National Geographic Magazine or an evening spent viewing a jungle movie melodrama suffices to indicate that individual men differ in physical appearance and that members of a distinct ethnic group regularly differ less among themselves than with members of other ethnic groups. It would appear that concepts of race are abstracted from observations of such inter-and intra-populational differences in appearance. The immediate question is how can these differences be studied, analyzed, and given predictive value within a scientific framework. Or brutishly stated, how can we clean up the idea of race?

The remainder of this paper is devoted to description of and statement of justification for a series of investigatory and statistical procedures which may well provide more meaningful results than those which heretofore have characterized studies of race and racial differences. The attempt has been to apply, straightforwardly and explicitly, common scientific principles and statistical techniques.[1]

The proposed study involves the following procedures:

1. Selection of phenotypic variables to be considered.
2. Quantification of phenotypic variables.
3. Definition of populations to be studied.
4. Random sampling of populations.
5. Objective measurement of phenotypic variables.
6. Statistical treatment of the accumulated data.
7. Separate application of statistical tests to data of each phenotypic variable.
8. Estimation of probability of observed samples being drawn from the same population.
9. Estimation of the probabilities of specific phenotypic combinations occuring in each population.
10. Application of these procedures[2] to further populations.

More detailed discussion of each of the items just listed as applicable to a specific study follows:

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1. Dr. Robert Kozelka, Department of Mathematics, University of Nebraska, kindly advised regarding problems of statistical treatment. Remaining errors in the suggested procedures, however, are sole responsibility of the writer. 2. Various statistical techniques have been used by Hootan, Czekanowski, and von Eickstedt, but for the purpose of analyzing racially mixed populations (Coon, 1939, p. 248) and not, as in the present paper, as a means of estimating probabilities.

(1)

There are several considerations governing the choice of phenotypic variables. First among them is that the variables be maturationally determined and genetically significant. It would be manifestly foolish to expend energy and money in the study of characteristics which are primarily environmentally determined, such as length of head hair or thickness of manual callosities.

Secondly, the variables for which separate scores are obtained should be genetically independent, since separate treatment of diverse effects of a single gene or set of genes would call into question the statistical inferences to be made, which presume the independence of phenotypic variables. Pleiotropically related characteristics (those resulting from action of the same gene or genes) may, however, be utilized to obtain a composite score which can be treated without violation of statistical assumptions. In the proposed study, pigmentation (a composite score), hair form, cephalic index, stature, and hirsuteness are the phenotypic variables which might be utilized[3], since they show promise of being both differentiative and quantifiable.

(2)

While classification data is certainly useful, most exact description and prediction are ordinarily possible only with quantified or measurement variables. In the proposed study, quantification of all variables would be attempted. Examples of possible quantifying procedures follow:

a. Pigmentation score obtained by measurement of light reflected from pupil of eye, arbitrarily chosen area of skin, and specified portion of head or body hair, and combination of these sub-scores.
b. Stature score obtained by determination of hip width and division of this measure into height.
c. Hair form score obtained by dividing length of stretched hairs by length of unstretched hairs, a specified number of hairs being tested for each individual, the choice of areas from which hairs are taken and the treatment of hairs, to include washing and drying procedures to control hair dressing, being specified.
d. Cephalic Index obtained in any presently acceptable manner.
e. Hirsuteness score obtained by counting number of hair roots in a specified small area.

If quantification of phenotypic variability is impossible and expression of phenotype by classificatory procedures, as in the case of blood-group data, is all that is possible, then such classification is to be accomplished. As will be indicated, data of both non-continuum and continuum variables may be utilized in making statistical inferences; the insistence that quantification be accomplished whenever possible is based, not upon any impossibility of use of non-continuum data, but upon the likelihood that precipitous classification in lieu of measurement will obscure significant variation.

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3. Dr. D. D. Miller, Department of Zoology, University of Nebraska, was consulted in reference to the genetic relationships of the suggested variables. He assured the writer that there is no evidence that they are pleiotropically related.

(3)

Definition of populations to be studied, to allow meaningful interpretation of data, must be entirely independent of the phenotypic variables being considered. The contrary procedure, the definition of pupulations by reference to phenotypic variables which are under consideration, would be flagrant "boot-strapping."

This principle applies to treatment of individual cases as much as to definition of populations prior to actual study; it is most objectional, in studying populations, to exclude cases because of divergence from presumed norms. Specifically, in the proposed study of populations of Navajo Indians (defined in terms of tribal status) and of Lincoln, Nebraska residents, no exclusion can be made of those members of either group who are of mixed ancestry or atypical appearance.

It would be possible, of course, to define populations in terms of the self-reaction, i.e., by response to a questionnaire designed to indicate whether the individual identifies himself with one or another racial category, or in terms of judgments by one or more investigators, but in either case, the populations thereby defined are not necessarily ethnical ones.

Definitions of groups in terms of political, tribal, or cultural status will, of course, cause inclusion of phenotypic deviants; but such deviants must be included if the study is to reveal more than the investigators' preconceptions of racial types. Indeed, the phenotypic deviants are as much a part of an ethnic group as the most typical individuals, and both deserve recognition in terms of their frequency of occurence.

(4)

Random sampling is essential to obtain this recognition and to allow confident interpretation of data. For this reason, use of tables of random numbers or other practical schemes of non-subjective selection is indicated. In the specific study suggested, random sampling of all males registered for draft purposes is a possible procedure.

(5)

Objective measurement can be accomplished by utilization of mechanical and electronic measuring devices and apparatuses in lieu of observer judgements. Details of the construction of such apparatuses designed to score quantified variables on numerical ratio scales, while of tremendous importance to successful study, are irrelevant here.

Any non-continuum variables studied would be classified on the basis of explicit criteria.

(6)

The statistical treatment contemplated is the calculation of means and standard deviations of scores of each sample and construction of tables of enumeration data taken from each sample.

(7)

The variances of each sample's distributions might be compared to show the relative phenotypic purity of the two samples. Analysis of Variance of "t" tests would be made of pairs of distributions of each contiuum phenotypic variable. Either test estimates the probability that the particular samples of phenotypic scores were drawn from the same population of scores. In general, the "t" test would appear to be the most practical of the two suggested, since it does not involve the assumption of homogeneity of variance and since commonly available tables of "t" are much more complete than those of the "F" test in the Analysis of Variance.

Chi Square tests would be made of the data for each non-contiuum phenotypic variable. The relative phenotypic purity of the two groups would be indicated by the sizes of the model classifications relative to the number of individuals in the samples. Each Chi Square test would estimate the probability that the particular sets of data were drawn from the same population of phenotypes.

(8)

Obviously for each phenotypic variable, Analysis of Variance, "t" test, or Chi Square test provides a separate estimated probability, hereafter called the probability of phenotypic identity. In keeping with the treatment of probabilities in elementary genetics, it would appear that the probability of the sample of individuals, individuals here referring to combinations of phenotypic scores and categorizations, being taken from the same population is equal to the product of the probabilities of phenotypic identity. A hypothetical example of this reasoning in Mendelian genetics is the case of two simultaneously existent recessive traits in second generation progeny. If dark color and tallness are dominant over light color and shortness, then first generation progeny mated with first generation progeny will be 9/16 dark and tall, 3/16 light and tall, 3/16 dark and short, and 1/16 light and short. The fraction 1/16 is equal to the product of the probability of any second generation progeny being light (1/4) and of being short (1/4).

The product of probabilities of phenotypic identity will hereafter be called the probability of populational identity. It is the statistical correlate of such statements as "The Navajo Indian and the White Man differ in coloration, hair form, stature, head shape, and amount of body and facial hair.

(9)

A related statistical procedure may be utilized to determine in which population a given individual most probably would occur. Given specified distributions of phenotypic scores and proportions of phenotypic categories, the probability that a given or more extreme score or classification would occur in the populations of scores or categorizations which the sample statistics can be made to describe is easily calculated Multiplication of the probabilities obtained gives the probability that a specific combination of scores and categorizations, or a yet more un-

likely one, will occur. This product may be called the probability of populational membership. Comparison of probabilities of populational membership would provide a statistical correltate to the statement "He looks more like an Indian than a White Man."

(10)

Once applied to a pair of distinct human populations, the method here outlined could be applied to yet other groups, and the statistical analysis carried out between the new data and that already accumulated. Thereby a cumulative body of data could be amassed, all parts of which would be capable of comparison through the statistical procedures outlined without repetitious sampling of the same population.

The practical problem is the selection of phenotypic variables for consideration, since the variables utilized should be highly differentiative for populations, but limited in number and complexity to facilitate study. Obviously, careful perusal of the literature, eventuating in one or more pilot studies, should be the basis of selection of phenotypic variables.

Conclusion

The procedures here suggested promise statistical correlates to the concepts of racial purity (through comparison of variances and relative sizes of modal categories), of racial differences (through calculation of the probability of populational identity), and of classification of individuals into one rather than another racial group (through calculation of probabilities of populational membership). Utilization of probabilities and the methods outlined for the comparison of samples of members of all major ethnic groups would provide accurate information of phenotypic variation among them, giving scientific significance to a modern myth.

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